1069-159 Excimer Laser Guidewire Penetration of the Imperforate Valve and Balloon Valvuloplasty for Pulmonary Atresia With Intact Ventricular Septum

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Background: Establishing continuity between the right ventricle (RV) and pulmonary trunk promotes RV growth and subsequent biventricular repair in babies with pulmonary atresia and intact ventricular septum (PAIVS). We pioneered the use of an Excimer laser wire followed by balloon valvuloplasty (BV) to achieve the purpose and reviewed our initial experience.

Method: Between 1996 to 1997, 7 babies (all neonates except one 8-month infant) underwent the above interventions. After angiographic confirmation of the diagnosis, a 4-French end-hole guiding catheter was lodged up the infundibular cavity (INF) through which a 0.018" Excimer laser guidewire was passed and the energy of 60 mJ/mm^2 at 25 pulse/sec was applied for 2 sec as the wire passed through the imperforate valve. The wire was secured in the descending aorta and sequential BV performed with balloons sized 2–4 mm followed by 6–8 mm in diameters.

Results: 2 patients had a narrowed INF of 2 mm; in 1 the wire passed into the pericardial cavity; in another the procedure was abandoned. 5 of the 6 (85%) babies had successful penetration of the imperforate valve and BV. The mean follow up period was 9.9 ± 7.8 months and the changes in haemodynamics and growth of the RV at the latest catheterization (mean = ± 4.0 months) were:

	Pressure Ratio RV:LV	(mm) Tricuspid Valve	(mm) INF
Pre-BV	1.73 ± 0.30	10.7 ± 1.6	4.7 ± 1.0
Post-BV	0.71 ± 0.15*	–	–
Follow-up	0.60 ± 0.18**	17.3 ± 1.7*	8.0 ± 1.9*

*p value (compare with pre-BV): * < 0.05, ** < 0.01, * < 0.005*

Conclusion: Excimer laser guidewire penetration of the imperforate valve followed by BV is an acceptable alternative treatment for babies with PAIVS.

1069-160 Occlusion of Patent Ductus Arteriosus With Long Gianturco Coils (4–6 Loops) Is Safe and Effective Without Detachment Mechanisms for up to 4.3 mm Ductus Diameter

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Transcatheter occlusion of the patent ductus arteriosus (PDA) using Gianturco coils was attempted and accomplished in 108 patients with a median age of 2.6 yrs (5 mos to 34 yrs) and a median weight of 12.7 kg (3.3 to 84.1 kg). Smallest ductus diameter ranged from 0.4 to 4.3 mm (mean 1.6 mm). Median fluoroscopy time was 13.9 min (5–37 min). One to 3 coils (mean 1.2) were implanted mostly transarterially. Coils with 4–6 loops were used in 90% and were delivered without snare or forceps technique. One inadvertent embolization occurred to the pulmonary artery (0.9%) in a patient with ductus spasm during angiographic measurement; pulse loss requiring TPA-lysis occurred in 1 (0.9%). No significant left pulmonary artery or aortic arch stenoses were observed. Patients were discharged the same day in 71%. Ductus closure was assessed by angiography after 10 min, by color Doppler after 2–12 hrs and 3–6 mos. Complete closure was achieved in 84% (91/108) after 10 min, in 94% (101/108) after 2–12 hrs and in 99% (74/75) after 3–6 mos. Ductus type, patient age or weight, or heparinization had no influence on occlusion rates. Residual shunt was significantly more frequent with larger ductus diameters at 10 min ($p = 0.001$) at 2–12 hrs ($p = 0.006$) and at 3–6 mos ($p = 0.017$). We conclude that transcatheter occlusion of the patent ductus arteriosus using long Gianturco coils with 4–6 loops is safe and effective without detachment mechanisms for all ductus types and sizes up to 4.3 mm smallest diameter.

1070 Cardiorenal Interactions in Heart Failure

Monday, March 30, 1998, 3:00 p.m.–5:00 p.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 4:00 p.m.–5:00 p.m.

1070-29 Renal Function Is the Most Important Determinant of Survival in Patients With Severe Congestive Heart Failure

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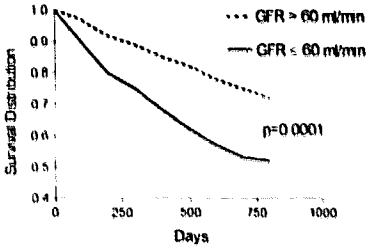
Background: Congestive heart failure (CHF) is associated with a decrease of glomerular filtration rate (GFR) and – more pronounced – of renal blood flow, leading to sodium and water retention and decreased renal clearance of exogenous & endogenous compounds.

Methods: Baseline GFR of patients with NYHA III–IV, who took part in the multicenter ibopamine survival trial (PRIME II), was estimated using the formula [(140-age in yr)/body wt in kg)]/[72*serum creatinine in mg/dl]. In women the calculated value was multiplied by 0.85. Multiple Cox regression analysis using backward selection was performed to correct the effect of GFR on mortality for confounding variables, as use of diuretics and CEI, together with Kaplan-Meier survival analysis.

Results: GFR could be calculated in 1708 patients. GFR was the most important determinant for survival in the PRIME II study, surpassing parameters as LVEF, NYHA classification, concomitant medication, hypotension, presence of diabetes mellitus, and tachycardia. A GFR < 60 ml/min indicated a 2.1 risk ratio for mortality.



Conclusion: GFR is the most important determinant of survival in patients with severe CHF, even more powerful than currently established parameters as LVEF, low BP and concomitant medication.

1070-30 Frequency and Adverse Impact of Mild Renal Dysfunction in Stable Heart Failure

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Background: The prevalence and implications of renal dysfunction in patients with heart failure are not well described.

Methods: To evaluate this issue, we conducted a retrospective analysis of the 6797 participants in the SOLVD Prevention and Treatment Trials. Survival in patients with a baseline serum creatinine level (Cr) of 1.5–2.0 mg/dl was compared to those with a Cr of < 1.5 mg/dl. Patients with a Cr > 2.0 mg/dl were excluded from the trials.

Results: A total of 1024 patients (15%) had a Cr 1.5–2.0 mg/dl. Participants with a Cr 1.5–2.0 mg/dl were older (64 vs.59 yrs), more likely to be male (91 vs. 85%), have NYHA class III/IV symptoms (20 vs 11%), diabetes (25 vs. 18%) or prior hypertension (51 vs.37%) [all P < 0.001]. Average ejection fraction was lower (26 vs 27%, P = 0.01) in the Cr 1.5–2.0 mg/dl group. The prevalence of prior MI (72 vs. 75%) and angina (58 vs. 57%) was similar in the two groups. Diuretics (60 vs. 40%) and antiarrhythmics (28 vs. 16%) were more commonly used in patients with a Cr 1.5–2.0 mg/dl. Enalapril use was equivalent (50%) in the two groups. Despite multivariate adjustment for baseline differences, a Cr 1.5–2.0 mg/dl remained strongly associated with all-cause mortality (RR 1.41; 95% CI 1.25–1.59; P < 0.001), pump failure death (RR 1.50; 95% CI 1.25–1.80; P < 0.001) and a trend for an increased risk of sudden death (RR 1.28; 95% CI 0.99–1.63 P = 0.051).

Conclusions: In patients with stable heart failure, mild renal impairment (Cr 1.5–2.0 mg/dl) is strongly associated with total mortality and disease progression manifested as pump failure death.

1070-31 Uric Acid as Independent Predictor of Impaired Prognosis in Patients With Chronic Heart Failure

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We have shown that serum uric acid (UA) is a marker of impaired oxidative metabolism, immune activation and endothelial dysfunction in CHF. We sought to determine, whether UA levels are therefore related to prognosis, and whether this would be independent of other risk factors (RF). Between 1992 and 1996 we assessed in 112 CHF patients (age 59 ± 12 y, peak VO_2 17.2 ± 76.7 ml/kg/min, mean ± SD) serum UA levels (495 ± 145 mol/l, range 187–930, age-matched healthy controls [mean ± 2SD]: 320 ± 80). In 96 patients also radionuclide left ventricular ejection fraction (LVEF) was assessed (26 ± 15%). During follow-up (mean 693 ± 437 days, range 4–1505) 35 events were recorded (32 deaths, 3 heart transplantations, 1-year event rate 20%, 2-years: 31%). Medication: 95% with diuretics, no patient was on allopurinol.

MONDAY POSTER